Analysis of Development of the Czech Enterprises

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The efficiency of the Czech companies in period 1996-2004, measured by return on capital and revenues, did not develop very favorably, only in the year 2000 came the turn. This contribution examines the factors that influenced this development and indicates the ways pointing to improvement. Even though the common Czech industrial company was only seldom created of economic value added, it is evident the positive influence of macroeconomic remedies accepted in the field of the price of credit capital and of legal entity income tax. Also another factors, that the performed analysis does not study, can be certain the accelerator of the efficiency growth – as for example the structural changes of branches, inflow of foreign investments, changes in the field of human capital, company culture, ethics, etc.

***Keywords**: comparison, efficiency, enterprise, influence.*

1. Introduction

The return (profitability) indicators of embedded instrumentalities to company are used for measuring of efficiency in the corporate finance theory. Classics divide produced effect (profit) on a part appointed for creditors (holders of debts) and on a part appointed for owners (holders of equity). In the theory of value that steadily more permeates from USA to the continental Europe in the last time, has broken through the view of efficiency by value that the company produces for owners. This is the economic value added that represents return on embedded capital exculpatory of alternative (safe) yield or average cost on corporate capital [Damodaran, 2000 and Higgins, 1995].

Either the company acquires the resources for financing of its activity by means of the capital market (American access) or by means of banking credits (European access), the indicator of its financial success remains the indicator of return of embedded capital. If the return takes on positive values, than it produces benefit not only for owners (shareholders), but also for all participated subjects (stakeholders). The aim of this contribution is to examine the efficiency of the Czech companies in last nine years and to point out the factors that influenced capital return (profitability) indicators.

2. Data Resources

Data, that income to the comparison of corporate efficiency, are published on web sides of MIT CR (The Ministry of Industry and Trade) [www.mpo]. They represent aggregate values from statements of companies in force of this Ministry, whose number of employees exceeded in examined period 100. It concerns several thou-

Table 1: The preliminary data for profitability analysis of the Czech companies (in force of MIT)

Item in bil. CZK	1996	1997	1998	1999	2000	2001	2002	2003	2004
Assets	1 795	1 955	2 094	2 126	2 175	2 288	2 392	2 484	2 597
Equity	897	913	928	933	950	1 014	1 095	1 178	1 283
Revenues	1 566	1 819	1 994	1 987	2 064	2 841	3 049	3 294	3 714
EAT	15	14	18	6	45	65	84	97	147
EBT	45	46	49	39	84	107	133	155	212
EBIT	99	105	111	86	124	144	165	182	236

Table 2: The preliminary data for profitability analysis of the Czech industrial companies

Item in bil. CZK	1996	1997	1998	1999	2000	2001	2002	2003	2004
Assets	1 471	1 583	1 683	1 723	1 773	1 865	1 936	1 985	2 062
Equity	780	795	812	819	831	884	942	1 010	1 096
Revenues	1 178	1 361	1 490	1 459	1 660	2 099	2 147	2 279	2 566
EAT	14	16	22	8	42	55	68	84	123
EBT	40	43	49	36	75	90	107	131	176
EBIT	81	88	97	74	108	121	134	152	193

sand companies that create statistically significant sample and consequently also the processed entries can be taken for granted. The preliminary data for profitability analysis of the Czech companies are summarized in table 1. For comparison inside the Czech Republic were detached from examined collection separately data in branch Industry – see table 2. Static indicators are calculated as averages from values shown by companies at the beginning and at the end of component years.

From efficiency view the Czech selection represents about 90% of all production.

3. Analysis Method

The efficiency of the Czech companies is examined by means of two indicators [Zalai, 2001]: ROA (return on assets) and ROE (return on equity). Indicator ROA compares earnings after taxes (EAT) with total assets (A) invested to company, regardless by which resources are financed (equity, debts, long-term, short-term). It testifies about overall appreciation of corporate assets, about fact, what size of profit (loss) is gained by unit of assets. Because the value of assets is identical with size of total corporate capital (C), it also testifies about appreciation of unit of capital by company. The pattern for calculation of this indicator can be written as:

$$ROA = \frac{EAT}{A} = \frac{EAT}{C}$$

The profitability rate of equity (E) is the indicator, which serves to owners (shareholders, companions, and other investors) to finding, whether their capital produces adequate return, whether the capital is used with intensity corresponding with size of their investment risk. It is important for owner so that ROE was higher than interests that he would receive from another form of investment (bonds, time deposits, stocks, etc.). This requirement is competent, because investor takes relatively high risk connected with bad productivity or even with company downfall, when he can lose his capital. For that reason it is expected, that costs on equity paid as dividends or as share on profit, are higher than costs on debts (D) paid as interests. In other words, equity is more expensive than debts. It is important in decision-making about capital structure. If the value of ROE is long-term lower or equal to profitability from stocks guaranteed by state, the company will be rather go to bankruptcy, because the investor will try to invest his capital elsewhere with higher profitability.

$$ROE = \frac{EAT}{E}$$

As both indicators reflect comprehensively the standard in consumption as well as in the input intensity, it is suitable to disintegrate them to lower level of the imaginary pyramid. Disintegration of indicator ROA can be done in accordance with the first Du Pont equation – either on equity base or on revenue base (R):

$$ROA = \frac{EAT}{A} = \frac{EAT}{E} \cdot \frac{E}{A}$$

$$ROA = \frac{EAT}{R} \cdot \frac{R}{A}$$

Where:

EAT/A – presents indicator ROE that represents level of equity appreciation by company

E/A – is denoted as equity quota (financial independence, equity endowment,

equity ratio) and reflects self-financing level of company

EAT/R – quantifies appreciation of depleted inputs (return on revenues – RR_1)

R/A – characterizes level of assets exploitation by company. It determines turnover ratio value (turnover) of assets in given time interval.

The figure 1 schematically represents the impact of component indicators on level and development of assets profitability (return) of company.

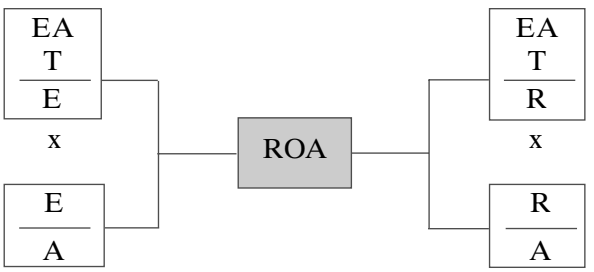


Figure 1: Chart of factors determining level of ROA

The second Du Pont equation serves to return on equity analysis. This equation results from solution of the first equation and is presented in form:

$$ROE = \frac{EAT}{E} = \frac{EAT}{R} \cdot \frac{R}{A} \cdot \frac{A}{E}$$

In this equation appears the inverse value of equity quota (A/E) that reflects level of company indebtedness and is called equity multiplier or financial leverage (FL).

The impact of macroeconomic environment on profitability of company, especially differentiation of financial flows pointing to creditors or to state, is possible to express by means of different levels of the shown profit and by amplification of the second Du Pont equation on this way:

$$ROE = \frac{EAT}{E} = \frac{EBIT}{R} \cdot \frac{EBT}{EBIT} \cdot \frac{EAT}{EBT} \cdot \frac{R}{A} \cdot \frac{A}{E}$$

$$ROA = \frac{EAT}{R} \cdot \frac{R}{A}$$

Where:

EBIT – means earnings before interests and taxes (gross profit). It is calculated as a sum of operating and financial profit

EBT – means earnings before taxes that rep resents EBIT reduced of cost interests shown by company

EAT – earnings after taxes and interests (net profit of company)

EBIT/R – is return on revenues calculated from gross profit

EBT/EBIT – is called interest reduction of profit (IRP). It expresses the price impact of debts on the company profitability. The price of debts is determined by macroeconomic environment and vicariously characterizes conditions in which company obtains debts as financial resources. If company uses debts, than is valid inequality EBT/EBIT<1.

EAT/EBT – means tax reduction of profit (TRP), it means the influence of the state tax policy on the company profitability. It is a factor that is objectively given by environment, in which the company occurs. If company obtains positive economic result (profit), than is valid inequality EAT/EBT<1.

4. Efficiency of the Czech Companies and Determining Factors

For assessing of developmental trends of preliminary quantities in absolute values can be used economic normals, that represent expected relation between indexes of changes in component years. Economic normal is written in this form of inequality:

$$I_{EAT} > I_{EBT} > I_{EBIT} > I_R > I_A$$

Calculated indexes values of year-to-year changes ($I_{EAT1997} = EAT_{1997} / EAT_{1996}$) are presented in table 3 and the result of comparison with above presented inequality is summarized in table 4.

The analysis [Sedlacek, 2001] of absolute data expresses, that the development of compo-

Table 3: **Indexes values for the test of economic normal**

Index/year	1997	1998	1999	2000	2001	2002	2003	2004
I_{EAT}	1,143	1,375	0,364	5,250	1,309	1,236	1,235	1,464
I_{EBT}	1,075	1,139	0,735	2,083	1,200	1,189	1,224	1,345
I_{EBIT}	1,086	1,102	0,763	1,459	1,120	1,107	1,134	1,270
I_{R}	1,155	1,095	0,979	1,138	1,264	1,023	1,061	1,126
I_{A}	1,076	1,063	1,024	1,029	1,052	1,038	1,025	1,039

Table 4: **The economic normal**

Index/year	1997	1998	1999	2000	2001	2002	2003	2004
$I_{EAT} > I_{EBT}$	yes	yes	no	yes	yes	yes	yes	yes
$I_{EBT} > I_{EBIT}$	no	yes	no	yes	yes	yes	yes	yes
$I_{EBIT} > I_{R}$	no	yes	no	yes	no	yes	yes	yes
$I_{TR} > I_{A}$	yes	yes	no	yes	yes	no	yes	yes

Table 5: **The coefficients of tempos of growth of the preliminary quantities Czech companies**

Item	1997	1998	1999	2000	2001	2002	2003	2004	Aveeerage
Assets	1,089	1,071	1,015	1,023	1,052	1,045	1,038	1,045	4,72
Equity	1,018	1,018	1,005	1,018	1,067	1,079	1,075	1,089	4,57
Revenues	1,161	1,096	0,996	1,038	1,376	1,073	1,080	1,127	11,40
EAT	0,933	1,285	0,333	7,500	1,444	1,292	1,154	1,515	33,30
EBT	1,022	1,065	0,796	2,153	1,273	1,243	1,165	1,367	21,38
EBIT	1,061	1,057	0,774	1,442	1,161	1,146	1,103	1,296	11,47

nent preliminary quantities in examined period conforms to the economic normal except the year 1999, when occurred to deceleration of tempo of growth of all preliminary quantities. Table 4 backs up the fundamental improvement immediately in the following year, because all covetable proportions are kept again. This fact also predetermines the positive development of ratio indicators in examined time period.

Table 5 shows tempos of growth of preliminary quantities of the Czech companies (in force of MIT). The best development shows indicator EAT (33,3 %), EBT (21,38 %) and EBIT (11,47 %).

For assessment of temporal trend of efficiency of the Czech companies were used partly synthetic indicators of capital return and partly analytic indicators acquired by their disintegration. The indicator values were calculated on the one hand for all companies examined in the sphere of MIT CR (see table 6) and on the other hand for the branch Industry (see table 7). Graphically is the development of capital and revenues return depicted for both collections of companies in figures 2 and 3. From comparison of both graphs is transparent higher return obtained by industrial companies. Higher assets turnover and stronger influence of the financial leverage shows conversely collection of all companies in force of MIT, it means including Building, Trade and Services. Detailed analysis of efficiency will be next oriented exactly on this collection.

From analysis of total return of assets results, that it has a growing tendency, except year 1999, in which occurred to the massive fall of profit. In the target year was obtained ROA 5,660 %, it means that from every crown of assets was

Figure 2: **Graph of development of return on capital and revenues of companies in force of MIT CR**

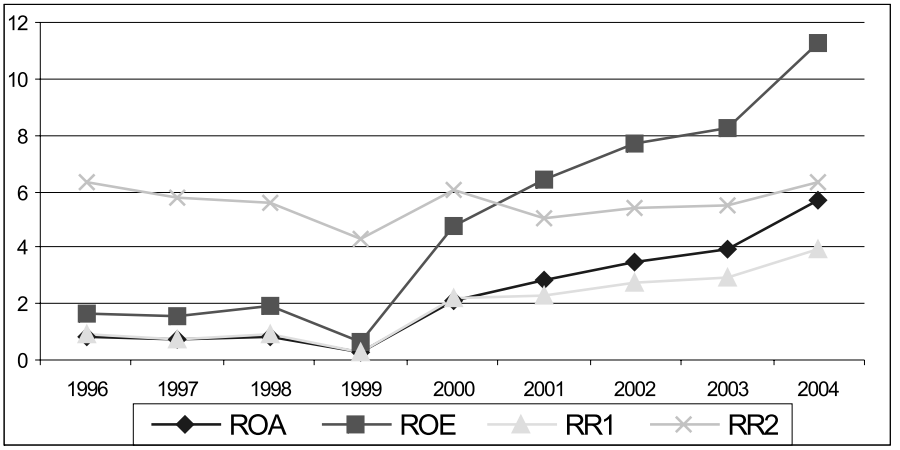
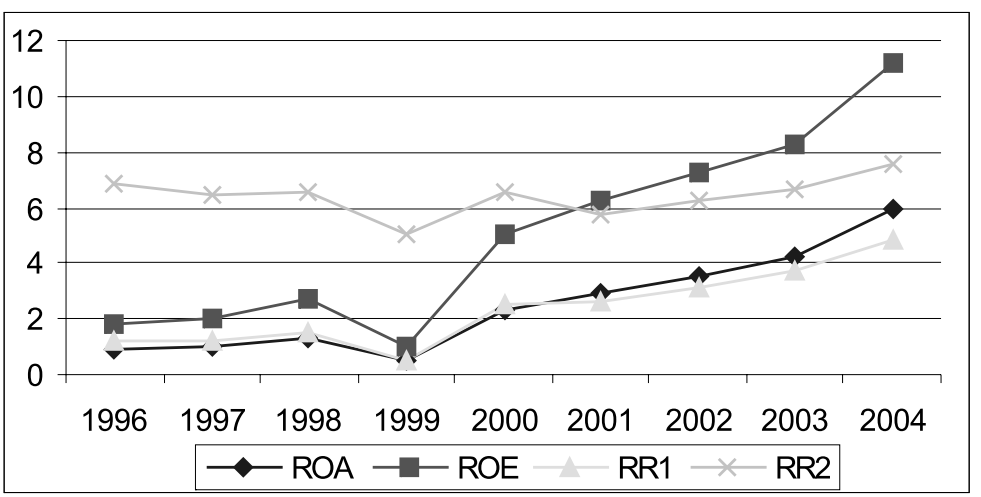


Table 6: **Indicators characterizing the efficiency of the Czech companies in force of MIT:**

Year	ROA %	ROE %	SE	RR_1 %	AT	RR_2 %	IRP	TRP	FL
1996	0,836	1,672	0,4997	0,958	0,8726	6,322	0,45454	0,33333	2,00111
1997	0,716	1,533	0,4670	0,770	0,9303	5,777	0,43809	0,30435	2,14129
1998	0,860	1,940	0,4432	0,903	0,9523	5,556	0,44144	0,36734	2,25646
1999	0,282	0,643	0,4386	0,302	0,9340	4,328	0,45348	0,15384	2,27867
2000	2,069	4,737	0,4367	2,180	0,9490	6,007	0,67742	0,53571	2,28947
2001	2,841	6,410	0,4433	2,288	1,2417	5,068	0,74305	0,60747	2,25641
2002	3,512	7,671	0,4578	2,755	1,2747	5,412	0,80606	0,63158	2,18447
2003	3,905	8,234	0,4742	2,945	1,3260	5,525	0,85164	0,62581	2,10865
2004	5,660	11,457	0,4942	3,958	1,4300	6,354	0,89830	0,69340	2,02416

Figure 3: **Graph of development of return on capital and revenues of industrial companies in CR**



obtained profit 5,66 groats. What reason of this positive development was, shows table 8, in which is depicted the leverage of component factors obtained by disintegration of the first Du Pont equation (see chart in the figure 1). Disintegration on equity base in the upper part of table 8 reveals the influence of appreciation of equity and its share on coverage of needs of a common company. Return on equity (ROE) oscillates on very low level and from the year 2000 begins to

Table 7: **Indicators characterizing the efficiency of the Czech industrial companies:**

Year	ROA %	ROE %	SE	RR_1 %	AT	RR_2 %	IRP	TRP	FL
1996	0,952	1,795	0,530	1,188	0,80081	6,876	0,49382	0,35000	1,88589
1997	1,010	2,012	0,502	1,176	0,85976	6,466	0,48863	0,37217	1,99119
1998	1,307	2,709	0,482	1,476	0,88532	6,510	0,50515	0,44897	2,07266
1999	0,464	0,977	0,475	0,548	0,84677	5,072	0,48648	0,22222	2,10378
2000	2,369	5,054	0,468	2,530	0,93626	6,506	0,69444	0,56000	2,13357
2001	2,949	6,222	0,474	2,620	1,12547	5,765	0,74380	0,61111	2,10973
2002	3,512	7,218	0,486	3,167	1,10899	6,241	0,79851	0,63551	2,05520
2003	4,232	8,317	0,509	3,686	1,14811	6,669	0,86710	0,64122	1,96535
2004	5,965	11,223	0,531	4,793	1,24442	7,521	0,91191	0,69886	1,88138

accrue up to value 11,223 % in the target year. Conversely the second factor of disintegration, it means the share of equity (SE) at first continuously fell down in average about 1,576 % per year and decelerated the appreciation of the capital of company owners, so that increased on the primary value again.

Disintegration on revenues base presented in the lower part of table 8 expresses the appreciation of depleted inputs (costs are the massive part of revenues) and a number of assets turns in one year. Return on revenues from net profit (RR_1) shows the similar developmental trend as return on equity. From expected dynamics of changes of both components of indicator in time ($I_{EAT} > I_R$) is derived the growing character. The value of indicator is also on very low level and does not help the assets turnover that fluctuates around value 1,10. This all means, that the turn of assets in common company is realized only once per year. The transformation of assets to revenues was slow and many companies were not able – on account of inadequate sales – to cover their costs.

Analysis of factors determining the indicator ROE of the Czech companies leans against entries in table 9. Choice indicators as well as their influences represent the second Du Pont equation enlarged of the profit reductions. The leverage of component factors on return on equity of the common Czech company can be interpreted on this way:

Table 8: **Disintegration of indicator ROA in accordance with Du Pont equations**

indicator	1966	1997	1998	1999	2000	2001	2002	2003	2004	ROA
EAT/E %	1,672	1,553	1,940	0,643	4,737	6,410	7,671	8,234	11,452	0,836
										0,716
										0,860
										0,282
x				x						2,069
										2,841
										3,512
										3,905
EAT/A	0,4997	0,4670	0,4432	0,4386	0,4367	0,4432	0,4578	0,4742	0,4942	5,660

ROA	1966	1997	1998	1999	2000	2001	2002	2003	2004	indicator
0,836	0,958	0,770	0,903	0,302	2,180	2,288	2,755	3,945	3,958	EAT/R%
0,716										
0,860										
0,282										
2,069					x					x
2,841										
3,512										
3,905										
5,660	0,8726	0,9303	0,9523	0,9340	0,9490	1,2417	1,2747	1,3260	1,4300	R/A

• Return on revenues (RR_2) calculated on the earnings before interests and taxes base, is in accordance with expectations markedly higher than indicators on the earnings after interests and taxes base (RR_1). Its dynamics had a negative tendency and in spite of turn in the year 2000 it was come only with difficulty to the level of year 1996.

• Interest reduction of profit (IRP) reflects the price of debts. The payment of price for provided capital (interests) goes at the expense of profitability for company owners. The company can influence this factor only in minimal extent, if exists the chance to choose the structure of debts financial resources. In the analysis was found the positive grow of indicator IRP an the last examined year on the practically double (closer see table 10), which is obviously the result of positive leverage of external factors (interest rates cut) and in smallish extent also of the leverage of internal factors, especially of mild increasing of debts share.

• Tax reduction of profit (TRP) characterizes the influence of tax burden on the company profitability. Also this indicator notched up the positive development as the result of state policy of consecutive reduction of company tax burden (closer see table 10).

• Assets turnover (AT) shows the growing trend and in year 2001 already got over the value 1. This trend signalizes the decreasing of assets intensity and their faster transformation to the company revenues.

• Financial leverage increases the profitability of capital invested by owners. It is a reciprocal value of equity quota, respectively of finan-

Table 9: **Determinants of indicator ROE**

Year	ROE = RR_2 x	IRP x	TRP x	AT x	FL
1996	1,672	6,322	0,45454	0,33333	0,8726	2,00111
1997	1,533	5,777	0,43809	0,30435	0,9303	2,14129
1998	1,940	5,556	0,44144	0,36734	0,9523	2,25646
1999	0,643	4,328	0,45348	0,15384	0,9340	2,27867
2000	4,737	6,007	0,67742	0,53571	0,9490	2,28947
2001	6,410	5,068	0,74305	0,60747	1,2417	2,25641
2002	7,671	5,412	0,80606	0,63158	1,2747	2,18447
2003	8,234	5,525	0,85164	0,62581	1,3260	2,10865
2004	11,457	6,354	0,89830	0,69340	1,4300	2,02416

cial independence of company. The variable trend of financial leverage in the whole examined period indicates that increasing produces the economic effect for company only if ROA is higher than the price of debts.

5. Conclusions

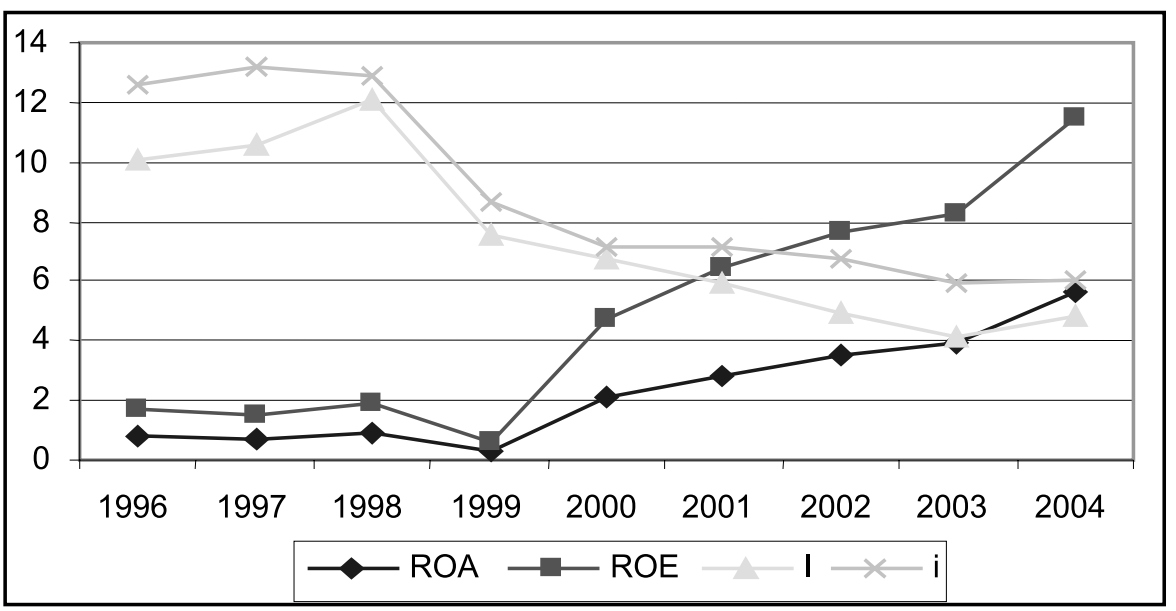
Analyzed 9 years period was not at the very beginning favorable for the Czech economy. The turning year in the Czech companies was year 2000, when markedly improved the efficiency measured by indicators ROA and ROE. On this developmental turn positively participated the economic state policy that also positively affects the efficiency of the Czech industry.

With certain log proved in the companies economy the macroeconomic development especially in the field pointing to the price of money (interest rate) provided to companies and the decrease of their tax burden (cut of legal entity income tax rate on 26 %). The efficiency of companies measured by the indicator ROA passed to positive values and begins to create the conditions for their development. Even for owners creates the common Czech company an economic added value, because indicator ROE

Table 10: **Interest and tax reduction of profit**

Year	EBIT	EBT	EBT/EBIT	EBT	EAT	EAT/EBT
1996	99	45	0,45454	45	15	0,33333
1997	105	46	0,43809	46	14	0,30435
1998	111	49	0,44144	49	18	0,36734
1999	86	39	0,45348	39	6	0,15384
2000	124	84	0,67742	84	45	0,53571
2001	144	107	0,74305	107	65	0,60747
2002	165	133	0,80606	133	84	0,63158
2003	182	155	0,85164	155	97	0,62581
2004	236	212	0,89830	212	147	0,69340

Figure 4: **Development of spread of common Czech company in years 1996-2004**



lies above the alternative profitability expressed by the yield of 5 years state bonds (I). In the company, that creates value added for owners (ROE>I) and its indicator ROA lies above the price of debts[1] (ROA>i), is suitable to use next debts, because indebtedness increasing makes better the profitability of the total capital of company (ROA). From figure 4, in which is illustrated the difference between return indicators and minimal values of expected profitability of capital of common company (so-called spread), is evident the consecutive reduction of spread (approaching of both curves) as far as to positively counteracting zone [(ROE-I)>0 or (ROA-i)>0].

For keeping of the initiated trend and the economic value added (positive spread) is necessary to find on the company level the ways for improving of their productive power. It is about invoking of the growth strategies based on investments to modern technologies, on long-term and short-term assets management, optimization of the capital structure of company, innovation of production, sales increasing and cost decreasing.

The beginning of the growth strategy back up also the last published data of the Czech Statistical Office, that show on continuation of increasing of share of the high tech industrial branches at the expense of the power and raw material claiming productions. The most dynamic branch of the Czech industry was the electrical industry that chalked up year-to-year production increasing about 29,4%.

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[1] As the price of debts (i) is thought annual interest rate from the total condition of credits in the CR [www.mfcr].